



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 2
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MAY 29 2018

MEMORANDUM

SUBJECT: Responses to National Remedy Review Board Recommendations for Operable Unit 8 (OU8) of the American Cyanamid Superfund site, Bridgewater, New Jersey

FROM: John Prince, Acting Director
Emergency and Remedial Response Division
Region 2

TO: Douglas Ammon, Chair
National Remedy Review Board

The U.S. Environmental Protection Agency's (EPA's) National Remedy Review Board (NRRB) provided advisory recommendations to EPA Region 2 related to the proposed remedy for Operable Unit 8 (OU8) of the American Cyanamid Superfund site, Bridgewater, New Jersey, in a memorandum dated May 23, 2018. The Region greatly appreciates the Board's thorough review and thoughtful comments on the proposed remedial action for the site, which was discussed during the Board's October 26, 2017 meeting.

The Region has incorporated many of the Board's recommendations into the Proposed Plan. Our specific responses to the Board's advisory recommendations are provided below. For convenience, each recommendation is presented in the order identified in your memorandum, followed by our response.

Alternative Remedy

NRRB Comment: In the information provided to the Board, the Region described a number of alternatives. The Board notes that it may be possible to combine certain elements of alternatives 5 and 6. This could provide flexibility by allowing consolidation of contaminated soils from the berms and soils underlying the impoundments in the on-site Corrective Action Management Unit (CAMU), if such soils meet (or can be treated to meet) CAMU acceptance criteria. This approach may be more cost effective than stabilization and capping in place within OU8, and might be advantageous in other ways (e.g., less residual waste in the floodplain, reduction in Operation and Maintenance (O&M) requirements, increased assurance that all residual contamination is treated and placed in a lined disposal unit). The Board recommends that the Region consider evaluating another alternative combining these two alternatives.

- *Regional response:* As part of Alternative 6, soil and clay impacted by OU8 impoundment material that is not otherwise addressed via excavation will be treated via In-Situ Stabilization (ISS) and left in place. Alternative 5 includes placement of all OU8 waste in the on-site CAMU after treatment. As requested, the Region considered combining elements of both alternatives by placing the treated Alternative 6 material in the on-site CAMU.

After further consideration, use of the on-site CAMU, which is specifically part of Alternative 5, is not considered as an option for final disposition under Alternative 6 for the following reasons:

- The on-site CAMU was originally designed for placement of Impoundment 1 and 2 waste material as per the 1998 OU3 ROD; however, remedial activities were suspended in 2004 due to air emission controls issues from ex-situ handling after thermal desorption treatment.
- The 1998 ROD treatment objective was 85 mg/kg for benzene (one of the CAMU permit limits), which was not achieved during 2004 remedial pilot testing attempt.
- Since 2004, numerous bench and field-scale studies were completed to evaluate the feasibility of using the CAMU, including various in-situ and ex-situ treatments, estimating air emissions, dispersion modeling, risk assessment, and liner compatibility testing. All testing indicated inherent air emission risks associated with any secondary treatment at the CAMU, which would be required.
- Prior to transporting the ISS treated materials from Impoundments 1 and 2 to the CAMU, the actual removal of the ISS material from the impoundments would require breaking up the "set" matrix into a granular/sandy matrix which would release high volumes of air emissions containing the COCs. This would result in serious threats to health and safety to workers, nearby businesses and the overall community. This important issue directly effects timeframes, management practices and procedures, equipment required, and cost. If the contaminated soils from the berms and soils underlying the impoundments are to be managed in the CAMU, the cost of Alternative 6 would increase substantially but would be significantly more difficult to implement and with a lower probability of success.
- The complex nature of OU8 material creates a unique challenge for controlling odors/emissions (thereby increasing potential risks to receptors living near the CAMU) and for protecting human health and the environment during excavation of ISS treated materials from the impoundments, transporting it over to the CAMU and handling/solidifying the material a second time at the CAMU with a nearby residential area approximately 200 feet away.
- The supporting state agency, the New Jersey Department of Environmental Protection (NJDEP), has taken the position that the CAMU must be re-designated with new site-specific treatment objectives to address principle hazardous constituents.

NRRB Comment: Based on the information provided to the Board, the Region's preferred approach would include the use of an off-site cement kiln. The Board recommends that the region should consider providing flexibility in the decision documents in designating off-site facilities to allow treatment at any facility permitted to accept the waste (and in compliance with the off-site rule) including, but not limited to, cement kiln facilities.

Regional response: The Region concurs with this suggestion and the FFS and Proposed Plan will include greater flexibility in selecting disposal options. While cement kilns will be used for costing purposes in the FFS, the document will clearly state that the excavated and dewatered OU8 impoundment material will be shipped by a licensed transporter to a facility that is permitted to accept this material, such as cement kiln or an incinerator, for destruction. This language will also be reflected in the Proposed Plan and eventually the Record of Decision.

Remedy Performance

NRRB Comment: Based on the information provided by the Region, this site involves multiple operable units. One of them, OU4, addresses site-wide soil and involves consolidation and in-situ stabilization/solidification, engineered caps or covers and groundwater collection and treatment. The Board recommends that the decision documents clarify how the actions in OU8 would be consistent with and integrate with the ongoing actions in OU4, including remedial action objectives (RAOs) and physical delineations. Additionally, the Region should consider if the remedy for OU8 will preclude the implementation of future actions that may be needed to achieve the RAOs for OU4.

The Board also recommends that the Region explain in its decision documents for this OU that any groundwater and soil contamination issues associated with these two impoundments are being addressed as part of the site-wide remedial action selected in the OU4 Record of Decision (ROD), and therefore, would not be addressed as part of the OU8 remedial action.

In the package provided by the Region, one of the RAOs for OU8 is to prevent or minimize groundwater impacts from contaminants of concern (COCs) contained within the impoundments. This RAO appears to be supported by remediation goals (RGs) that are adapted from the OU4 soil remedy and presented in the package. These site specific RGs for OU8 are as much as six orders of magnitude above the generic soil screening levels for protection of groundwater. The Board recommends that the Region clearly explain in its decision documents how the methodology for establishing RGs for OU8 is up-to-date for determining that residual materials are consistent with the OU4 groundwater remedial action objectives.

Regional response: The decision documents will clearly indicate how the actions in OU8 will be consistent with and integrate with the ongoing actions in OU4. The Region considered the question of whether the OU8 remedy will preclude the implementation of future actions that may be needed to achieve OU4 RAOs and does not anticipate that this will be a problem. Any groundwater and soil contamination issues associated with OU8 will be addressed directly as part of OU8 or as part of OU4, and the use of PRGs for OU8 as described to the board originally has been modified. The bases for these conclusions are as follows:

- The OU4 ROD addresses site soil, groundwater and impoundments. The soil and impoundment material is generally being managed on-site through the use of engineered caps plus treatment using in-situ stabilization, as needed. Groundwater is being addressed through the use of an extraction and treatment system along with an enhanced recovery system consisting of trenches, wells and/or containment walls. The RAO for the groundwater portion of the remedy is to “eliminate the migration of contaminants exceeding the more stringent of federal MCLs and NJ GWQS in the overburden and bedrock aquifers beyond the point of compliance through a combination of source actions and hydraulic controls to the extent practicable.”

- The footprint of the OU8 remedy is entirely within the footprint of the OU4 remedy
- The RAOs for OU8 have been modified slightly to address the NRRB's comments, and they are now:
 - Remove, treat, and/or contain material that is considered PTW.
 - Prevent human exposure (direct contact) to COCs above cleanup levels in soil.
 - Minimize or reduce current or future migration of COCs from Impoundments 1 and 2 to groundwater

The OU8 remedy will prevent or minimize future migration of COCs from the OU8 impoundments, including to groundwater, but if migration does occur, it will be addressed through the OU4 treatment processes and the point of compliance is beyond the edges of the OU8 area. The OU4 remedy includes the use of hydraulic barrier walls and extraction wells to capture contaminant mass and maintain an inward gradient around the site, and.

- Regarding soil, PRGs for Site-wide soil have been established under the OU4 ROD and were found to also be applicable for OU8 to address potential exposure to receptors. Soil and clay impacted by OU8 impoundment material that exceeds PRGs identified in Table 3-2 will be treated using ISS and managed in place with engineering controls (i.e., capping). Soil and clay impacted by OU8 impoundment material with COC concentrations below the PRGs identified in Table 3-2 can be managed in place with engineering controls, but without treatment. Therefore, Table 3-2 summarizes the PRGs for COCs in soil and clay impacted by OU8 impoundment material within the physical limits (i.e., toe of the berms) of impoundments 1 and 2.

Table 3-2 PRGs for Soil and Clay Impacted by OU8 Impoundment Material

Benzene	4,460 (mg/kg)
Nitrobenzene	12,300 (mg/kg)
Naphthalene	6,180 (mg/kg)
Toluene	460,000 (mg/kg)
Xylene	25,000 (mg/kg)

Applicable or Relevant and Appropriate Regulations (ARARs)

NRRB Comment: In the information provided to the Board, the Region mentioned permitting for certain actions associated with cleanup at this site. The Board notes that consistent with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) section 121(e)(1), no federal, state or local permits are necessary for on-site remedial actions. The Board recommends that the Region explain in its decision documents how the preferred approach would meet the specific substantive requirements in the ARARs associated with this cleanup that would otherwise be addressed through federal or state permits.

Regional response: The Region is aware of CERCLA Section 121(e)(1). However, the substantive requirements of all ARARs are supposed to be met, and this is typically done through a permit equivalency process. NJDEP has significant state ARARs and the Region will continue to work with them to assure that all substantive state requirements are identified and met and that no impediments related to these requirements are encountered, with the understanding that the issuance of formal permits is not needed. Substantive requirements of ARARs will be identified in the ROD.

Remedial Action Objectives

NRRB Comment: The RAOs presented to Board included two groundwater-related RAOs that were unclear and very similar. These RAOs are "Prevent or minimize current or future migration of contaminants of concern (COCs) from Impoundments 1 and 2" and "Prevent or minimize groundwater impacts from COCs contained within the impoundments." The Board recommends that the RAOs be revised to more clearly state the objectives of this OU as distinct from but consistent with the other site OUs (e.g., OU4). In particular, the Board recommends that the Region consider merging these two RAOs and modifying them to clarify that the objective of this OU is to address sources of contamination to groundwater, not to address contaminants in groundwater.

In addition, the presentation to the Board indicated that there were no risks to ecological receptors yet the RAOs include reducing exposure to ecological receptors. The Board recommends that the Region's decision documents ensure that the risk assessment summary is consistent with the RAOs.

Regional response: Please see the Region's response to the Board's Remedy Performance Recommendation Part 2 for discussion of the Region's RAOs. A brief description will be provided in the decision document, with the details to be provided in remedial design documents following remedy selection. All groundwater is being addressed under OU4.

Principal Threat Waste

NRRB Comment: The information provided to Board states that all Principal Threat Waste (PTW) in impoundments 1 and 2 will be addressed by any of the proposed alternatives, however, it is unclear if PTW material may remain in the residual materials and soil berms. The Board recommends that the decision documents clarify if PTW is present in the residual materials and soil berms, consistent with CERCLA, the NCP, and EPA guidance and policy. If the residual materials and soil berms contain PTW, the Board recommends the region clarify how the approach being taken for these materials is consistent with CERCLA § 121(b)(1)'s preference for treatment "to the maximum extent practicable;" 40 CFR § 300.430(a)(1)(iii)(A)'s expectation that "treatment [be used] to address the principal threats posed by a site, wherever practicable;" and 40 CFR § 300.430(f)(1)(ii)(E)'s preference for treatment "to the maximum extent practicable," while protecting human health and the environment, attaining ARARs identified in the ROD, and providing "the best balance of trade-offs" among the NCP's five balancing criteria.

Regional response: The Region has added or edited information within the decision documents that clarifies which materials are being addressed and which materials are PTW. More specifically, the Region will be deleting the confusing word "residuals" and inserting "soil and

clay impacted by OU8 Impoundment material". This wording identifies all materials that are expected to be found within impoundments 1 and 2 along with PTW. In the decision documents, all of the alternatives address PTW and all soil and clay impacted by OU8 Impoundment material. It will be further explained in the FFS, Proposed Plan and ROD what is meant by "Impoundment material", i.e., acid tars, PTW, COCs. In addition, please see the Region's response to the Board's Remedy Performance comment.

Human Health Risk

NRRB Comment: In the package presented to the Board, Tables 1a and 1b indicate that the streamlined risk assessment identified cancer risk from exposure to the impoundment materials at levels greater than 10^{-2} . The Board recommends that the region confirm that the Agency's recommended model for high carcinogenic risks was used to develop these risk estimates. This model is recommended in Risk Assessment Guidance for Superfund Volume I Human Health Evaluation Manual (Part A) Interim Final (EPA/540.1-89/002) (December 1989). Additionally, the Board recommends the region explain the modeling and risk assessment *conclusions* in the decision documents so the public can better understand site risks and be afforded a meaningful opportunity to provide comment.

Regional response: The Region reviewed the documentation and the Agency's recommended model for high carcinogenic risks was not used to develop the risk estimates presented to the Board. The Region ran the calculation using the high-risk model and added this information to the administrative record. The modeling and risk assessment conclusions will be clearly explained in the Proposed Plan and ROD in a way that the public can readily understand and provide comment.